

DDC Field Installation Guide

Water-to-Air Units



**BOSCH**

**Installation Manual**

8 733 904 851 (2013/05)

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## INTRODUCTION

This manual provides information for installing the FHP 560 and FHP 583 Control Boards (also known as the DDC) on commercial, water-to-air units in the field.



Installation and servicing of this equipment can be hazardous due to system pressure and electrical components. Only trained and qualified personnel should install, repair, or service the equipment.



Before performing service or maintenance operations on the system, turn off main power to the unit. Electrical shock could cause personal injury or death.



When working on equipment, always observe precautions described in the literature, tags, and labels attached to the unit. Follow all safety codes. Wear safety glasses and work gloves. Use a quenching cloth for brazing, and place a fire extinguisher close to the work area.

## Unpacking and Inspection

Unpack the DDC kit and inspect the contents per Table #1. If any part of the kit appears damaged, missing or if additional components are required (per Table #2), do not attempt to install the kit. Contact your local distributor for assistance.

**Table 1: Kit Contents List**

Item	Description	Qty
<b>A</b>	DDC Controller Assembly (includes: Preprogrammed Controller and Wire Harness)	1
<b>B</b>	Controller Mounting Screws	2
<b>C</b>	Controller Cover	2
<b>D</b>	Cover Screws	3
<b>E</b>	Thermistor, 10K 88" lead	3
<b>F</b>	Snap Bushing	1
<b>G</b>	FHP 560/583 User Guide	1
<b>H</b>	BACView Instruction Manual	1
<b>I</b>	Field Installation Guide	1
<b>J</b>	Cork Tape - White Backing	1

**Table 1: Kit Contents List**

Item	Description	Qty
<b>K</b>	Insulation Tape	1
<b>L</b>	Cable Clamp	1
<b>M</b>	Tie-Wraps	7

**Table 2: Optional Accessories List**

Item	Description	Part#
<b>N</b>	RS-PRO Wall Sensor	8733800500
<b>O</b>	RS-PLUS Wall Sensor	8733800503
<b>P</b>	RS-BASE Wall Sensor	8733800504
<b>Q</b>	RS-Humidity Wall Sensor	8733800505
<b>R</b>	12" Duct Mounted Temperature Probe	641-258
<b>S</b>	Thermistor, 10K 40" lead	641-147
<b>T</b>	Combo Temperature/Humidity Duct Probe	641-257
<b>U</b>	BACview Kit	641-K31
<b>V</b>	BACview Programming Cable	641-261
<b>W</b>	LON Card	641-237
<b>X</b>	DDC Input Expansion Module	641-264
<b>Y</b>	UPM I Replacement Kit	8733903903
<b>Z</b>	UPM II Replacement Kit	8733903904

## Required Tools and Materials

- 5/16 nut driver
- 9/64 drill bits
- Flat-head screwdriver

## UNIT PREPARATION

1. Remove power from the unit.



Abide by all Electrical Safety and Lockout Procedures in accordance with local, state and federal regulations.

2. Locate the front side of the Water-to-Air Heat Pump per Figure #3.
3. Remove front-side panel to expose electrical box.
4. Locate the Unit Protection Module (UPM) in the electrical box.
5. Verify part numbers as shown in Figure #1 & #2; Single Compressor UPM-I: 8 733 800 259 or Dual Compressor UPM-II: 8 733 800 260.
6. If UPM board(s) part numbers do not match either of the two (2) numbers listed above, then new UPM Board Kits (Table 2) will need to be ordered.

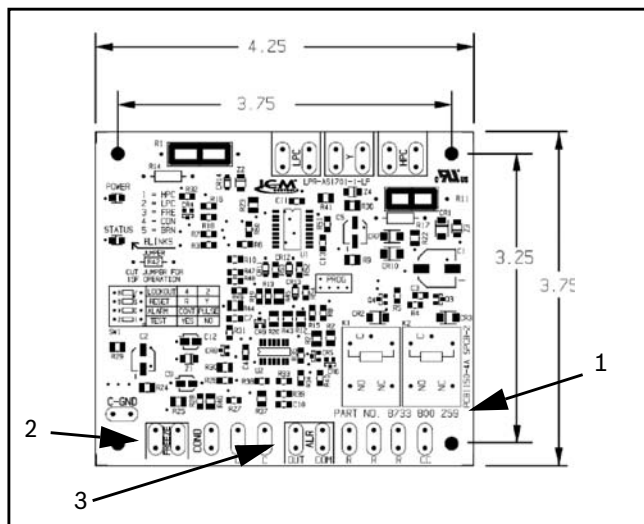


Figure # 1

- [1] UPM Part Number  
[2] Freeze Sensor Contacts  
[3] Alarm Contacts

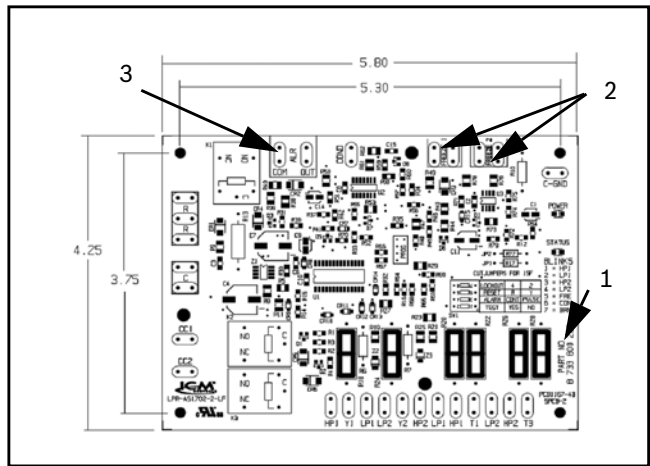


Figure # 2

- [1] UPM Part Number  
[2] Freeze Sensor Contacts  
[3] Alarm Contacts

## MOUNTING THE CONTROLLER

1. The controller is mounted externally to the right-side panel of Heat Pump. Locations are shown on a typical EC360 per Figure #3.
2. Locate the controller on the right side panel and line up the harness with the top access knockout as shown in Figure #4.
3. Mark and drill holes to use for mounting the controller as indicated in Figure #3.
4. If necessary, assemble harness onto controller per the wiring diagram in Figure #6.
5. Use the supplied mounting screws to attach the controller to the right side of the unit.
6. Route the terminated ends of the harness through the top access knockout port (Figure #4) and into the adjacent electrical box.

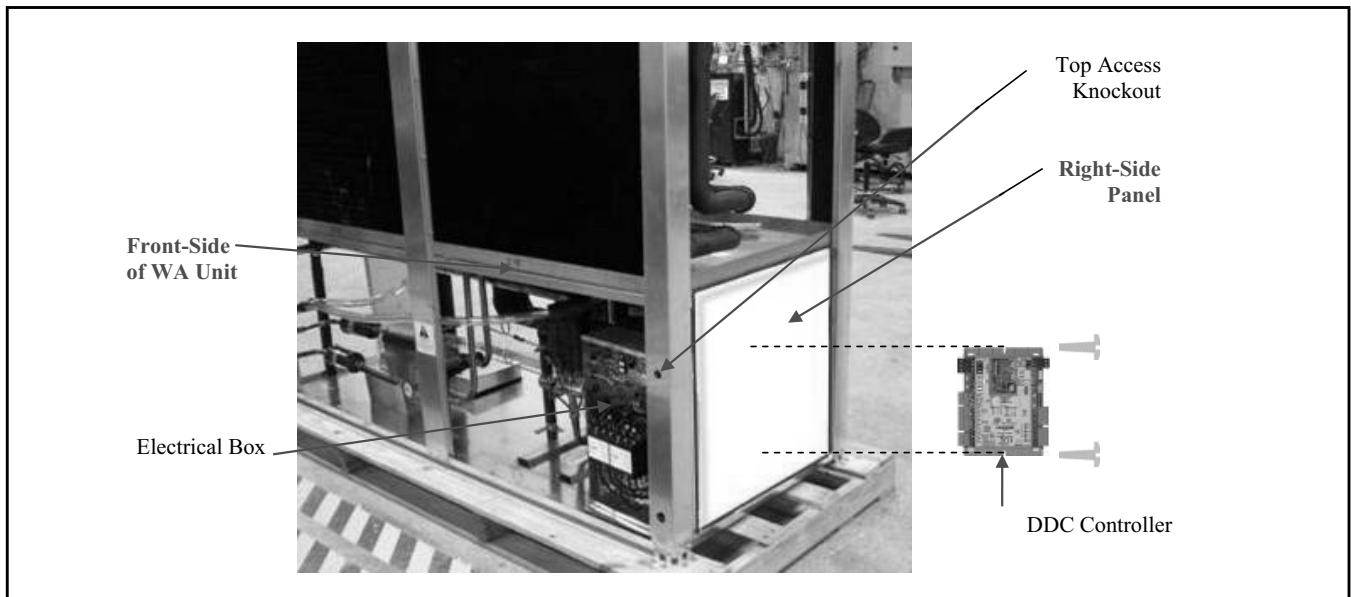


Figure # 3

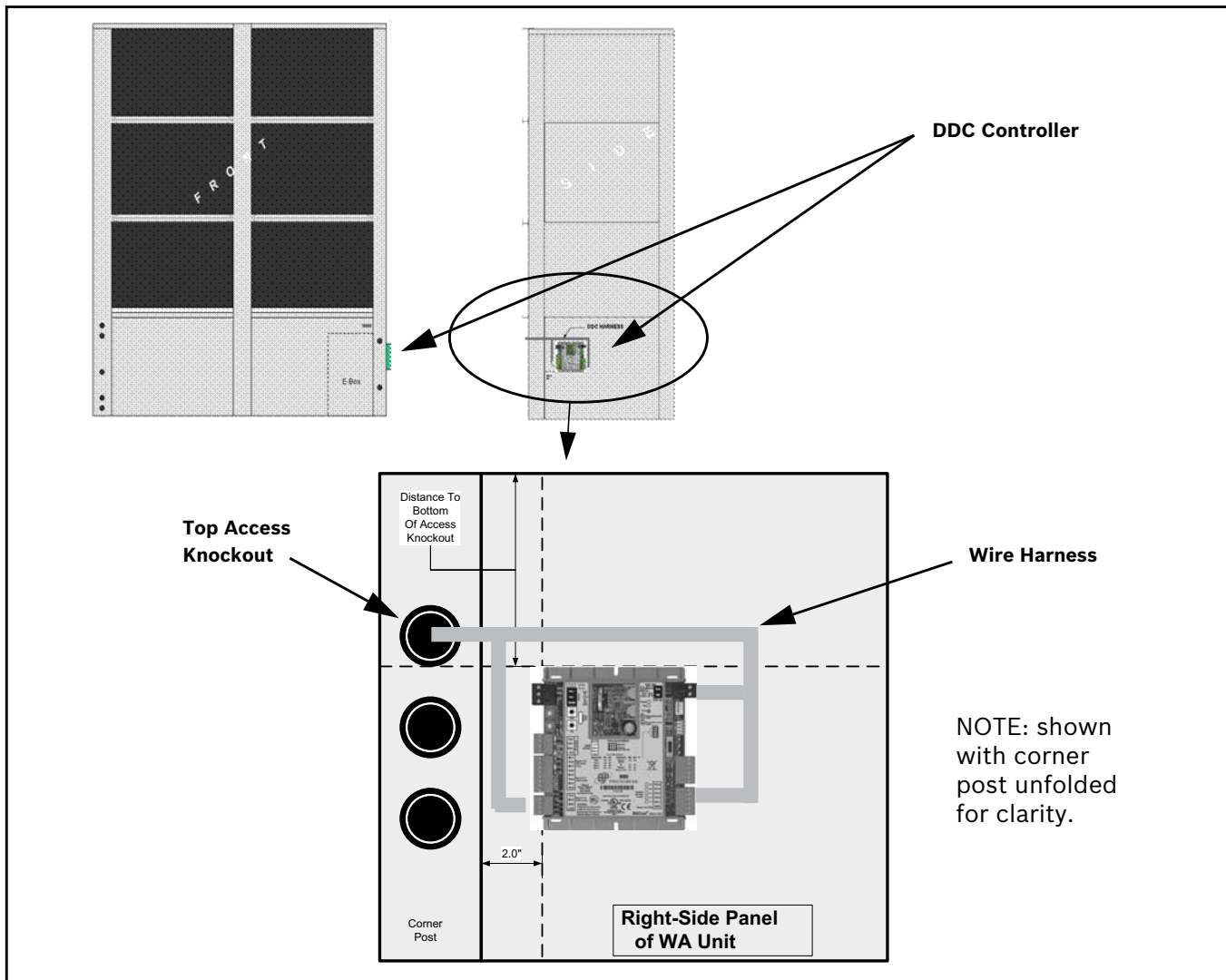


Figure # 4

## TERMINAL BLOCK CONNECTIONS

Refer to the wiring diagram in Figure #6 for detailed instructions on wiring the various components applicable to your units. The table in Figure #5 provides a general guide for connecting all labeled wires:

Label	Qty	Wire Color	Description	Destination
<b>C</b>	<b>1</b>	Blue	Common	E-Box, Terminal Block
<b>O</b>	<b>1</b>	Black	Reversing Valve	E-Box, Terminal Block
<b>Y/Y1</b>	<b>1</b>	Brown	Stage 1 Cooling	E-Box, Terminal Block
<b>Y2/E</b>	<b>1</b>	Purple (short)	(Y2) Stage 2/Economizer, (E) Electric Heat	E-Box, Terminal Block
<b>R</b>	<b>1</b>	Yellow	24 VAC	E-Box, Terminal Block
<b>G</b>	<b>1</b>	Orange	Blower	E-Box, Terminal Block
<b>H/W</b>	<b>1</b>	Red (short)	(H) Hot Gas Reheat, (W) Electric Heat	E-Box, Terminal Block
<b>DATS</b>	<b>2</b>	Purple (long)	Discharge Air Temperature Sensor	Blower Housing (Air Handler Section)
<b>LWTS</b>	<b>2</b>	White	Leaving Water Temperature Sensor	Heat Exchanger Leaving Water Pipe
<b>ALR-OUT</b>	<b>1</b>	White	UPM Alarm Out	E-Box, UPM Board
<b>ALR-COM</b>	<b>1</b>	Red (long)	UPM Alarm Common	E-Box, UPM Board

**Figure # 5 Wiring Chart**

1. Inside the electrical box, connect the power and signal wires to the corresponding terminal block locations per Figure #6, and based on the options for your particular unit.
2. For the DATS and LWTS connections, install the provided thermistors at their respective locations per the chart/table in Figure #5.
3. Route the thermistor wires into the electrical box, and connect the terminated ends (female) of the thermistor wires to the terminated ends (male) of the corresponding DATS or LWTS leads from the DDC wire harness.

## WIRING THE CONTROLLER

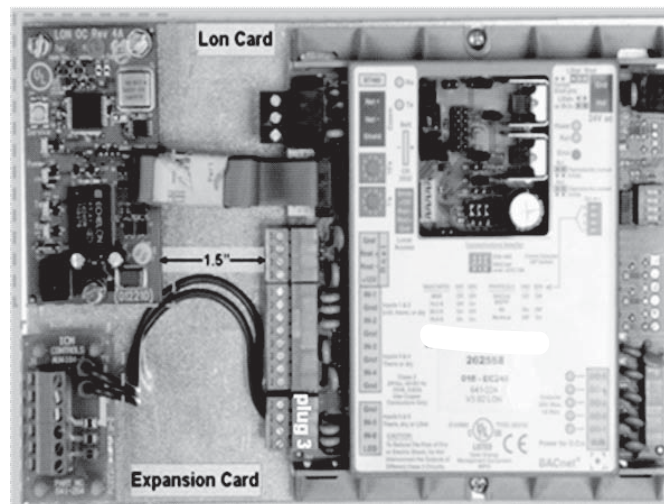
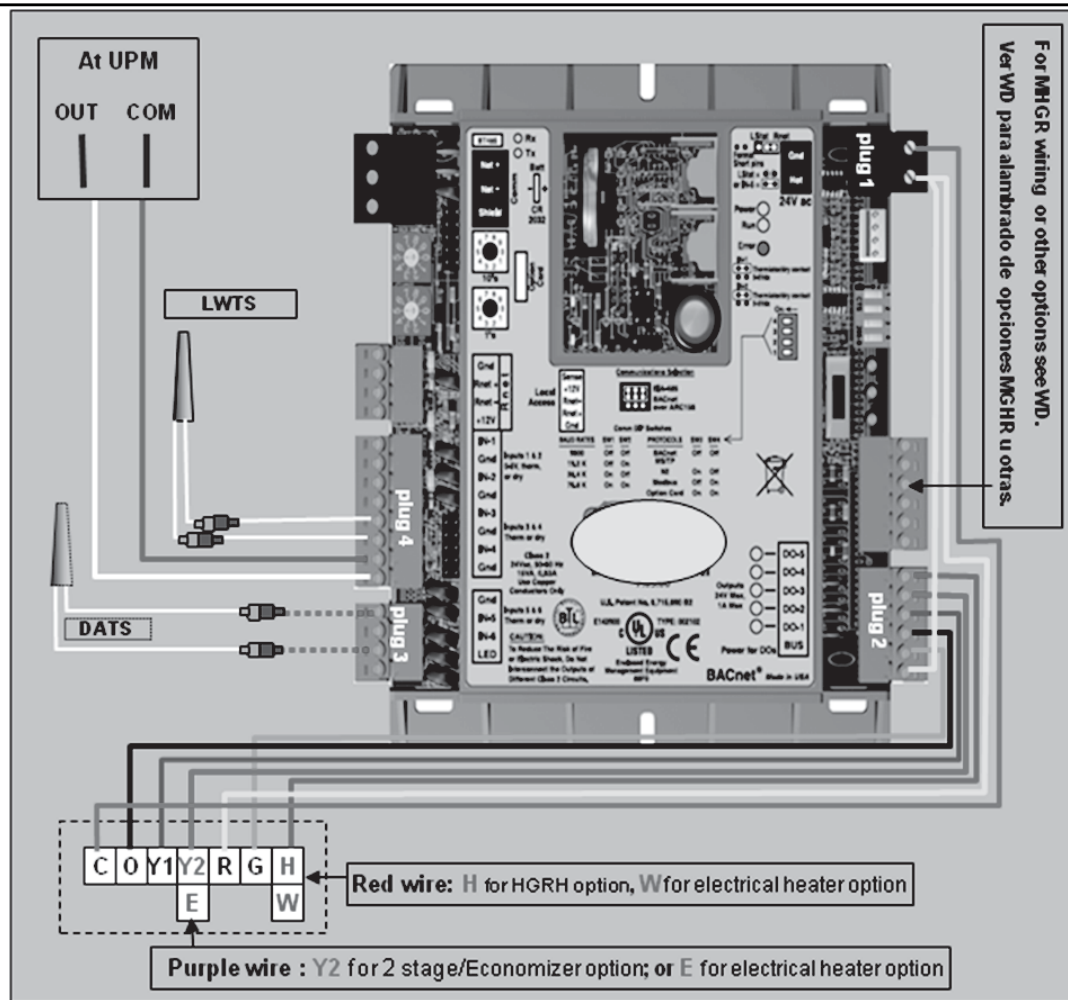


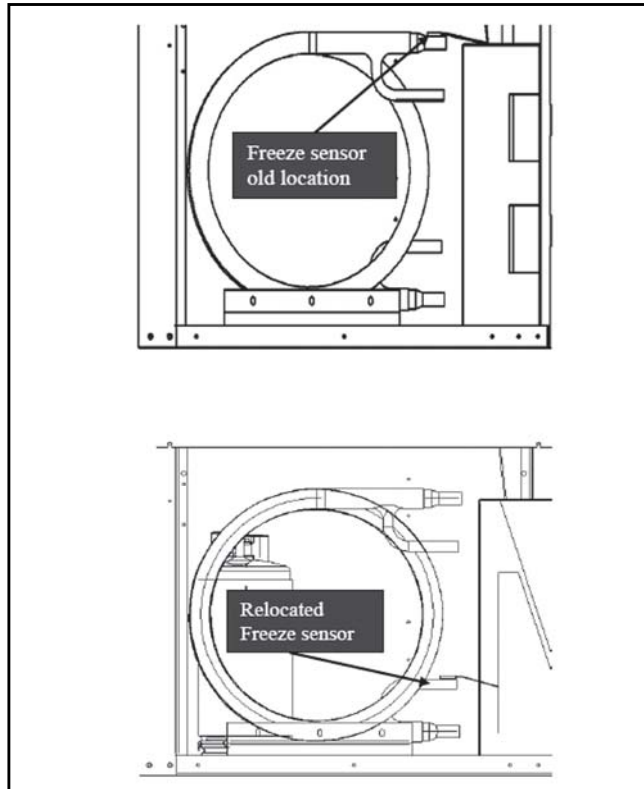
Figure # 6 Controller Connections

## INSTALLING THE FREEZE SENSOR



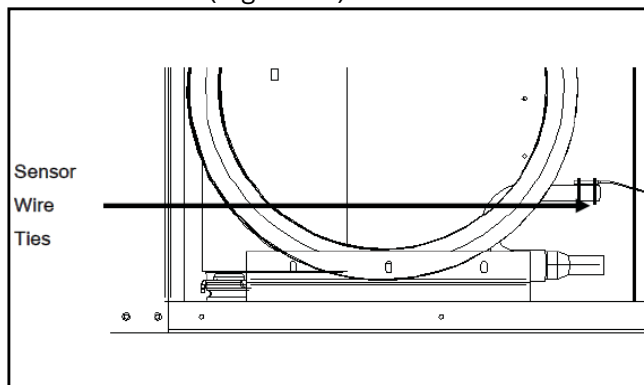
If the unit is already equipped with the freeze sensor option, verify sensor location per Figure #7 and skip the following steps.

1. Route the provided freeze sensor to the refrigeration line of the water coil. (Figure #7)



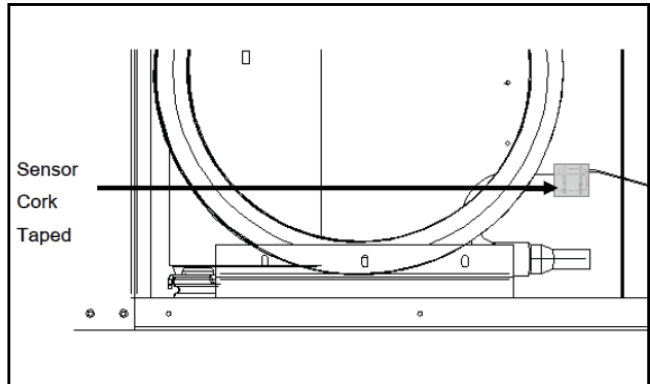
**Figure # 7**

2. Use the two(2) supplied tie-wraps to mount the sensor. (Figure #8)

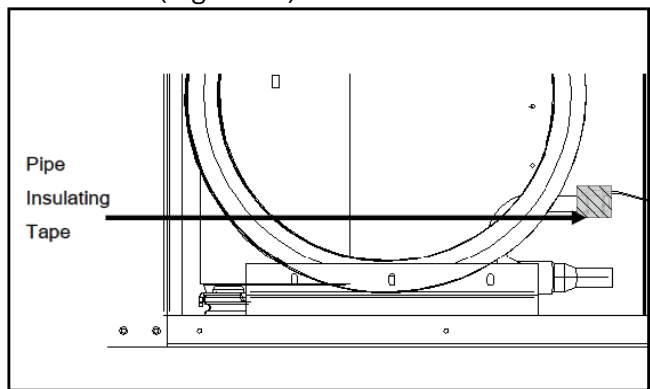


**Figure # 8**

3. Use the provided cork tape to wrap the sensor. (Figure #9)



4. Apply the provided pipe insulating tape to provide good thermal connection to the sensor. (Figure #4)



**Figure # 9**

5. Connect the terminated ends of the sensor wires to the UPM board at the location(s) specified in Figure #1 & #2;
  - For UPM-I units connect the sensor on the water coil to Freeze 1.
  - For UPM-II units connect the sensor on the water coil of the first compressor to Freeze 1, and connect the sensor on the water coil of the second compressor to Freeze 2.



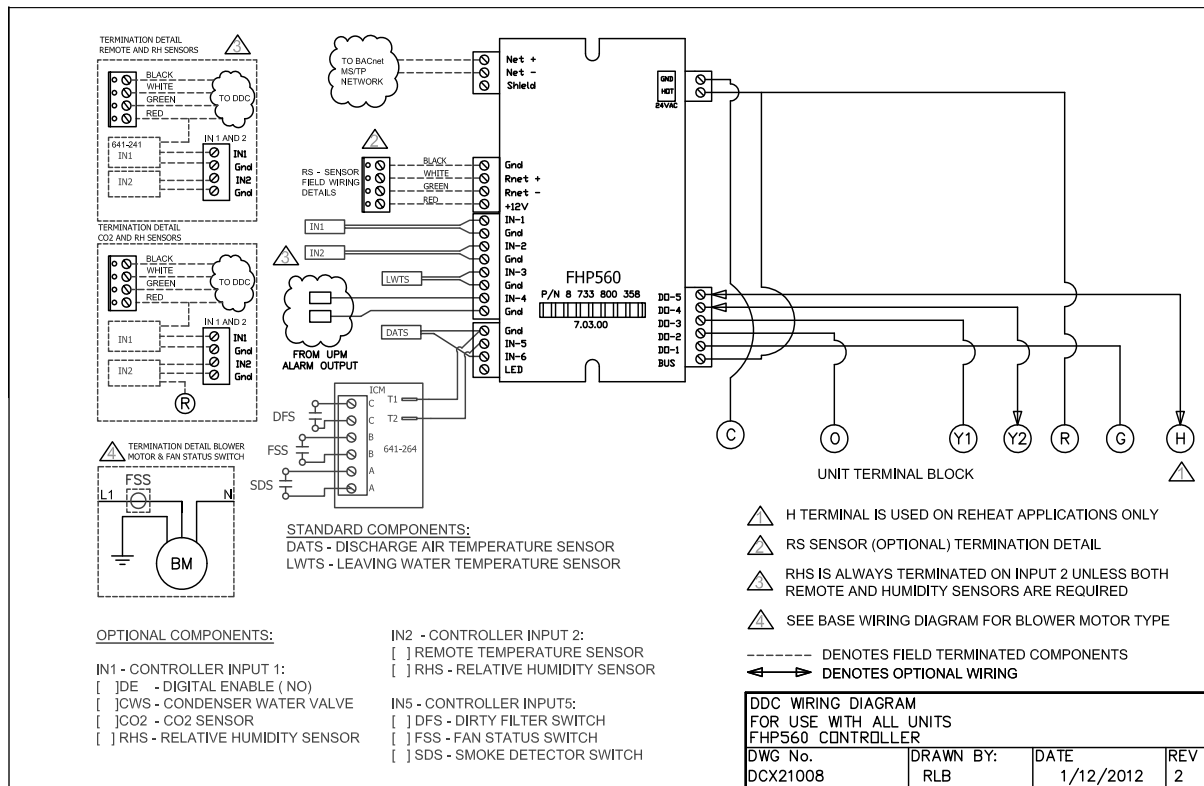
There is no polarity for these wires.

## UPM TO DDC ALARM CONNECTION

1. Locate the Alarm (ALR) Contacts on the corresponding UPM-I or UPM-II board per Figure #1 & #2.
2. Connect the cables labeled OUT and COM from the DDC wiring harness to the spade connectors labeled OUT and COM on the UPM board.



## DDC WIRING DIAGRAM FOR FHP 560



SCHNITT HIER / CUT HERE / CORTE AQUÍ

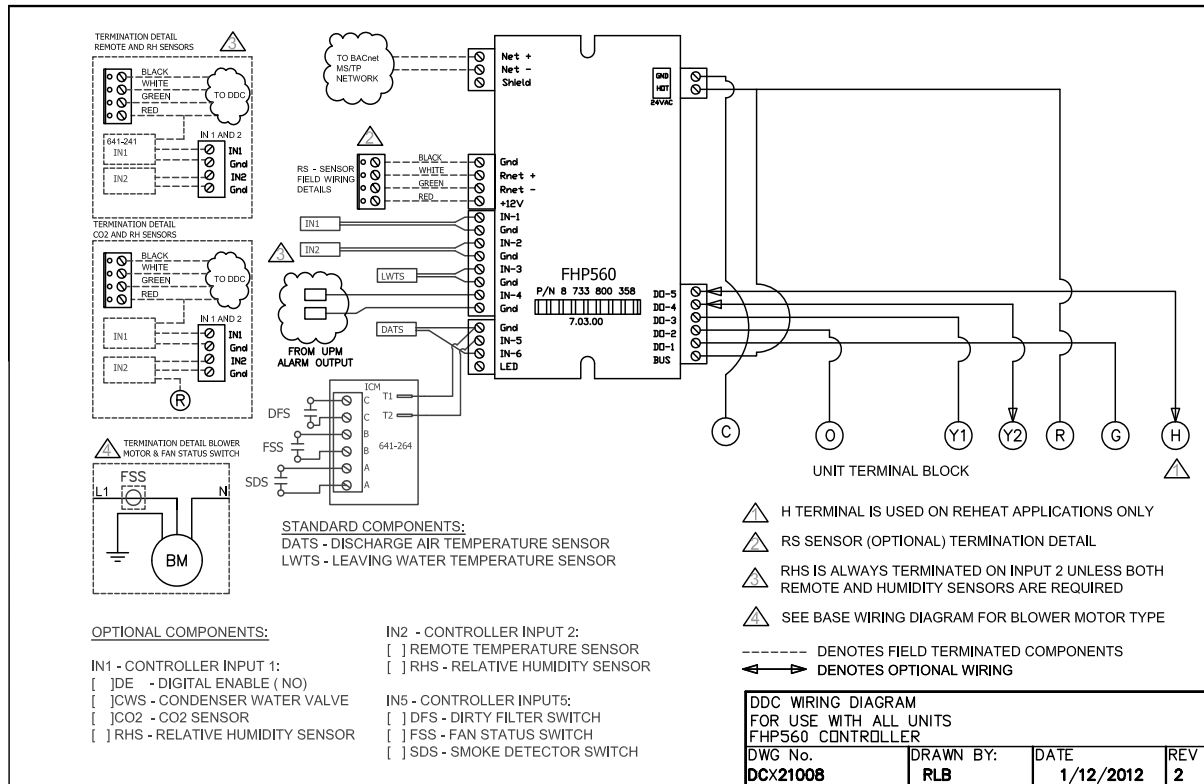
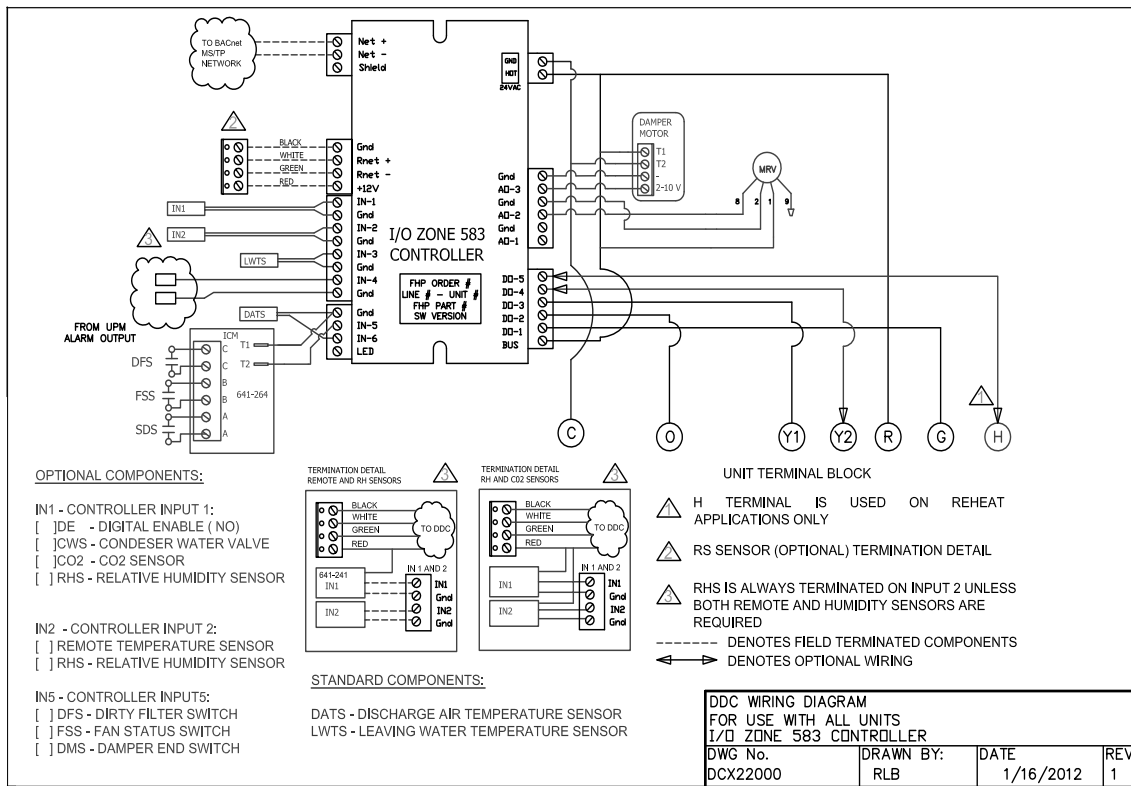


Figure # 10 DDC Wiring Diagram for FHP 560

## DDC WIRING DIAGRAM FOR FHP 583



SCHNITT-HIER / CUT-HERE / CORTE-AQUI

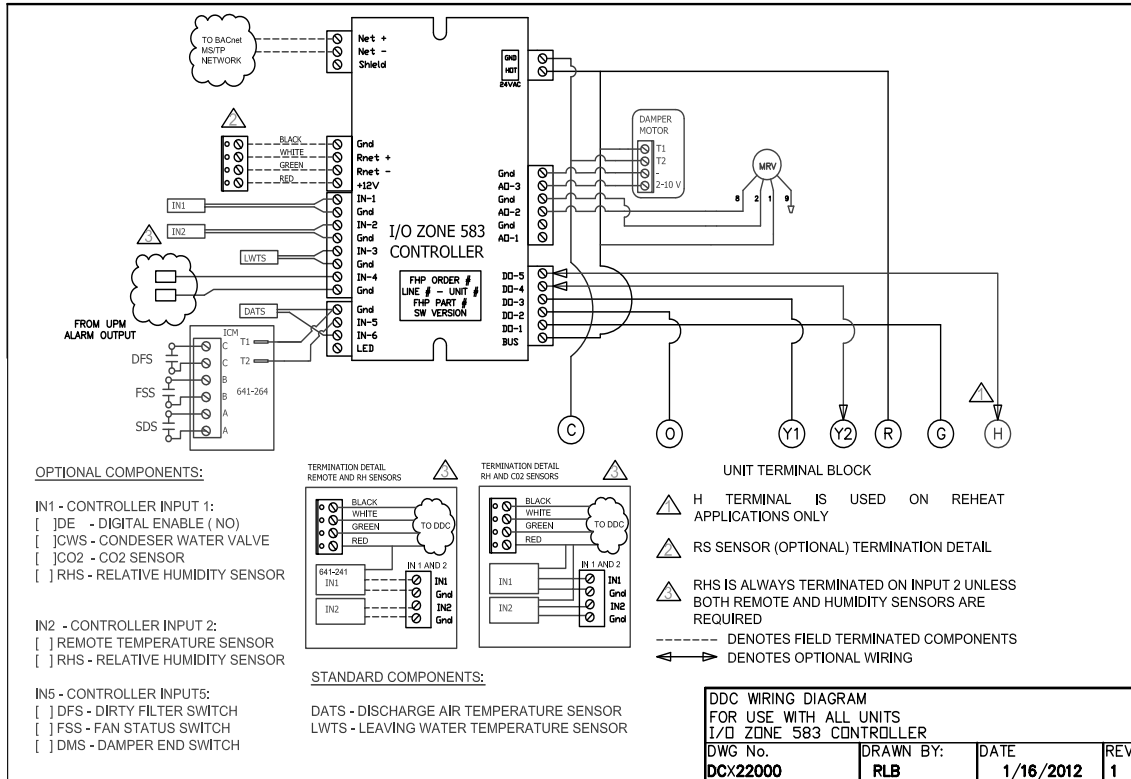


Figure # 11 DDC Wiring Diagram for FHP 583

## UNIT CONFIGURATION - ZONE BASIC

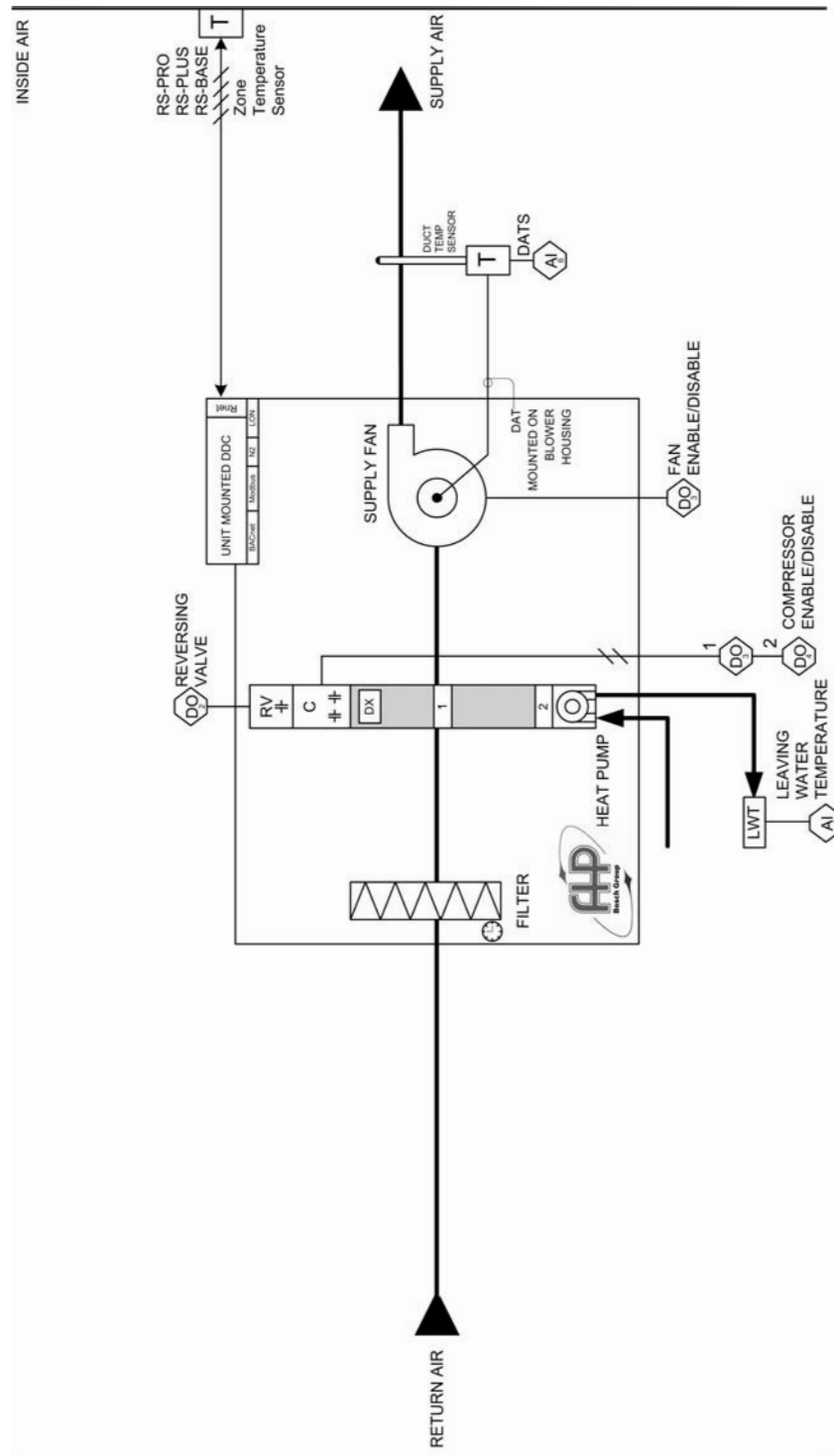


Figure # 12 Unit Configuration - Zone Basic

## UNIT CONFIGURATION - DISCHARGE AIR CONTROL BASIC

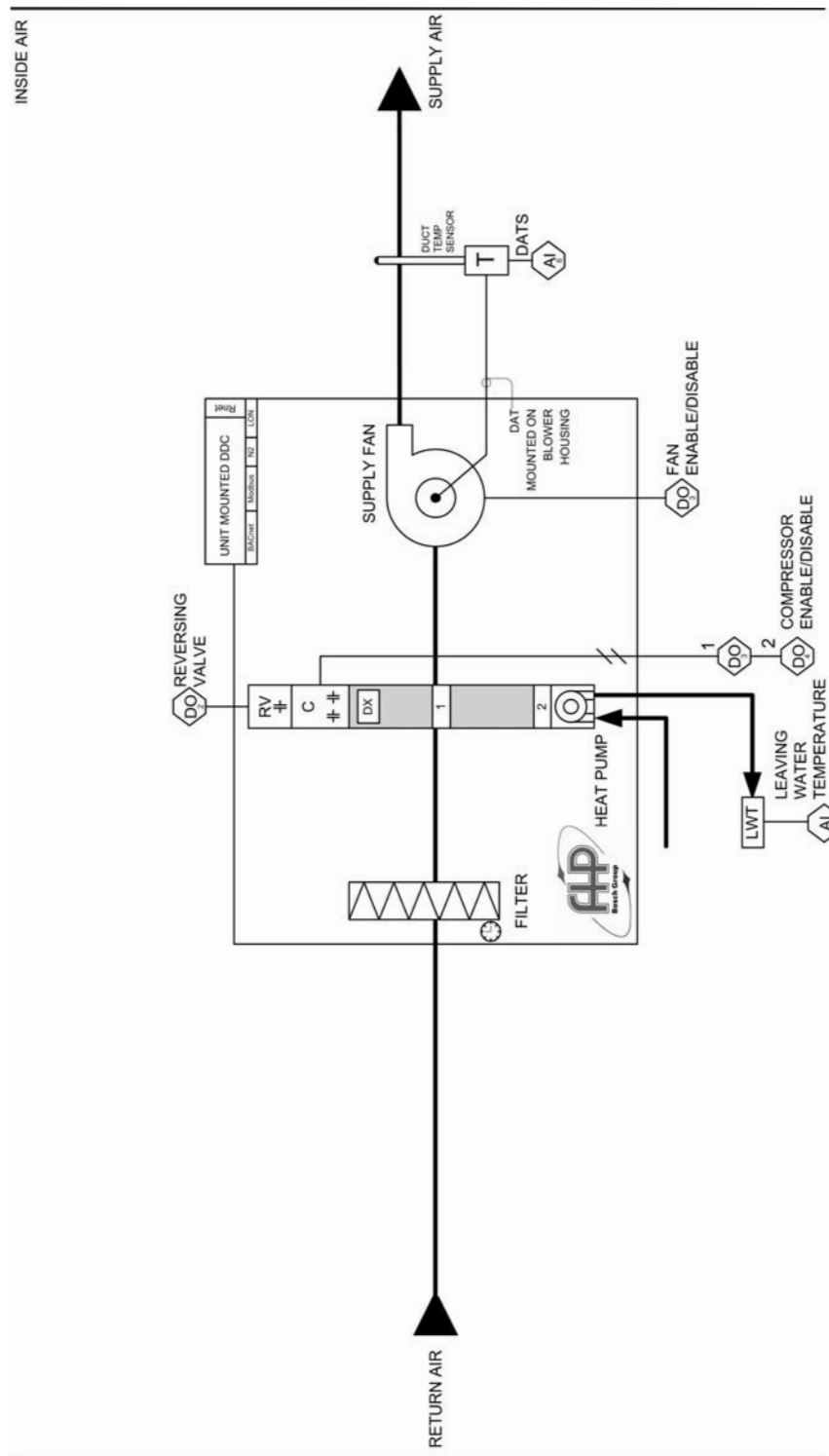


Figure # 13 Unit Configuration - Discharge Air Control

## NOTES







**BOSCH**

601 N.W. 65th Court, Ft. Lauderdale, FL 33309

Phone: 866-642-3198 | Fax: 954-776-5529

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